

Table 8
Former Brule Incinerator Area Groundwater Analytical Results - December 2016

Parameter	USEPA Residential Groundwater Concentration for Vapor Intrusion	USEPA Industrial Groundwater Concentration for Vapor Intrusion	USEPA MCL or May 2016 Tap Water RSL	April 2016 PRWQS ¹	BR-1 12/21/2016	BR-1 DUP 12/21/2016	BR-2 12/21/2016	BR-3 12/21/2016	BR-4 12/21/2016
<i>Volatile Organic Compounds Analytical Results (ug/L)</i>									
1,1,1-Trichloroethane	6000	25000	200	200	<1	<1	<1	<1	<1
1,1,2,2-Tetrachloroethane	2.4	11	0.076	1.7	<1	<1	<1	<1	<1
1,1,2-Trichloroethane	4	18	5	5	<1	<1	<1	<1	<1
1,1-Dichloroethane	6.2	27	2.8	---	<1	<1	<1	<1	<1
1,1-Dichloroethylene	160	690	7	7	<1	<1	<1	<1	<1
1,2,3-Trichlorobenzene	---	---	7	---	<2	<2	<2	<2	<2
1,2,4-Trichlorobenzene	25	110	70	35	<2	<2	<2	<2	<2
1,2,4-Trimethylbenzene	21	89	15	---	<1	<1	<1	<1	<1
1,2-Dibromo-3-chloropropane	0.02	0.24	0.2	---	<5	<5	<5	<5	<5
1,2-Dibromoethane	0.13	0.58	0.05	0.052	<2	<2	<2	<2	<2
1,2-Dichlorobenzene	1900	8100	600	420	1.1	1	0.46 J	<1	<1
1,2-Dichloroethane	1.8	7.8	5	3.8	<1	<1	<1	<1	<1
1,2-Dichloropropane	1.9	8.4	5	5	<1	<1	<1	<1	<1
1,3-Butadiene	0.027	0.12	0.018	---	<5	<5	<5	<5	<5
1,3-Dichlorobenzene	---	---	---	320	0.58 J	<1	<1	<1	<1
1,4-Dichlorobenzene	1.9	8.3	75	63	0.56 J	0.57 J	<1	<1	<1
1,4-Dioxane	2200	9600	0.46	---	105 J	220 J	19.3	27.6	0.311
2-Butanone (MEK)	1800000	7500000	5600	---	<5	<5	<5	<5	<5
2-Hexanone	6200	26000	38	---	<10	<10	<10	<10	<10
Acetone	18000000	77000000	14000	---	12.5 J	<25	<25	<25	<25
Benzene	1.3	5.6	5	5	<1	<1	<1	<1	<1
Benzyl Chloride	2.5	11	0.089	---	<2	<2	<2	<2	<2
Bromochloromethane	560	2400	83	---	<1	<1	<1	<1	<1
Bromodichloromethane	0.69	3	0.13	5.5	<1	<1	<1	<1	<1
Bromoform	85	370	3.3	43	<1	<1	<1	<1	<1
Carbon Disulfide	1000	4300	810	---	<2	<2	<2	<2	<2
Carbon Tetrachloride	0.34	1.5	5	2.3	<1	<1	<1	<1	<1
Chlorobenzene	310	1300	100	100	1.1	1.1	0.37 J	<1	<1
Chloroethane	20000	82000	21000	---	<2	<2	<2	<2	<2
Chloroform	0.66	2.9	8	57	<1	<1	<1	<1	<1
Chloromethane	230	960	190	---	<2	<2	<2	<2	<2
cis-1,2-Dichloroethylene	---	---	70	70	<1	<1	<1	<1	<1
cis-1,3-Dichloropropene ²	---	---	0.47	3.4	<1	<1	<1	<1	<1
Cyclohexane	820	3500	13000	---	3.9	4.1	0.6 J	<1	<1
Dibromochloromethane	---	---	0.87	4	<1	<1	<1	<1	<1

Table 8
Former Brule Incinerator Area Groundwater Analytical Results - December 2016

Parameter	USEPA Residential Groundwater Concentration for Vapor Intrusion	USEPA Industrial Groundwater Concentration for Vapor Intrusion	USEPA MCL or May 2016 Tap Water RSL	April 2016 PRWQS ¹	BR-1 12/21/2016	BR-1 DUP 12/21/2016	BR-2 12/21/2016	BR-3 12/21/2016	BR-4 12/21/2016
Dichlorodifluoromethane	6	25	200	---	<2	<2	<2	<2	<2
Ethylbenzene	2.6	12	700	530	<1	<1	<1	<1	<1
Freon 113	1200	5100	55000	---	<1	<1	<1	<1	<1
Isopropylbenzene	630	2600	450	---	2.4	2.7	6	<1	<1
Methyl Acetate	---	---	20000	---	<20	<20	<20	<20	<20
Methyl Bromide	15	63	7.5	---	<2	<2	<2	<2	<2
Methyl Isobutyl Ketone (MIBK)	420000	1800000	6300	---	<5	<5	<5	<5	<5
Methyl Tert Butyl Ether	370	1600	14	14	12.3	12.8	2.7	0.56 J	<1
Methylcyclohexane	---	---	---	---	<1	<1	0.5 J	<1	<1
Methylene Chloride	630	7600	5	46	<5	<5	<5	<5	<5
p-Isopropyl Toluene	---	---	---	---	<1	<1	<1	<1	<1
Styrene	7000	29000	100	---	<1	<1	<1	<1	<1
tert-Amyl Alcohol	4100	17000	6.3	---	<20	<20	<20	<20	<20
tert-Butyl Alcohol	---	---	---	1400	134	138	15.9 J	<20 J	<20 J
Tetrachloroethylene	12	50	5	5	<1	<1	<1	<1	<1
Tetrahydrofuran	590000	2500000	3400	---	<5	<5	<5	<5	<5
Toluene	15000	63000	1000	1000	<1	<1	<1	<1	<1
trans-1,2-Dichloroethylene	---	---	100	100	<1	<1	<1	<1	<1
trans-1,3-Dichloropropene ²	---	---	0.47	3.4	<1	<1	<1	<1	<1
Trichloroethylene	0.94	5.9	5	5	<1	<1	<1	<1	<1
Trichlorofluoromethane	---	---	5200	---	<2	<2	<2	<2	<2
Vinyl Chloride	0.13	2.1	2	0.25	<1	<1	<1	<1	<1
Xylene (total)	290	1200	10000	10000	<2	<2	<2	<2	<2
Low Molecular Weight Alcohols Analytical Results (ug/L)									
Ethanol	---	---	---	10000	<100	<100	<100	<100	<100
Isobutyl Alcohol	---	---	5900	---	<100	<100	<100	<100	<100
Isopropyl Alcohol	450000	1900000	410	---	<100	<100	<100	<100	<100
Methanol	86000000	360000000	20000	---	<200	<200	<200	<200	<200
n-Butyl Alcohol	---	---	2000	---	<100	<100	<100	<100	<100
n-Propyl Alcohol	---	---	---	---	<100	<100	<100	<100	<100
sec-Butyl Alcohol	58000000	---	24000	---	<100	<100	<100	<100	<100
Polycyclic Aromatic Hydrocarbons Analytical Results (ug/L)									
1-Methylnaphthalene	---	---	1.1	---	<1	<1.1	<1.1	<1	<1.1
2-Methylnaphthalene	---	---	36	---	<1	<1.1	<1.1	<1	<1.1
Acenaphthene	---	---	530	670	<1	<1.1	<1.1	<1	<1.1
Acenaphthylene	---	---	---	---	<1	<1.1	<1.1	<1	<1.1

Table 8
Former Brule Incinerator Area Groundwater Analytical Results - December 2016

Parameter	USEPA Residential Groundwater Concentration for Vapor Intrusion	USEPA Industrial Groundwater Concentration for Vapor Intrusion	USEPA MCL or May 2016 Tap Water RSL	April 2016 PRWQS ¹	BR-1 12/21/2016	BR-1 DUP 12/21/2016	BR-2 12/21/2016	BR-3 12/21/2016	BR-4 12/21/2016
Anthracene	---	---	1800	8300	<1	<1.1	<1.1	<1	<1.1
Benzo(a)anthracene	---	---	0.012	0.038	<0.05	<0.055	<1.1	<1	<0.055
Benzo(a)pyrene	---	---	0.2	0.038	<0.05	<0.055	<1.1	<1	<0.055
Benzo(b)fluoranthene	---	---	0.034	0.038	<0.1	<1.1	<1.1	<1	<0.11
Benzo(g,h,i)perylene	---	---	---	210	<1	<1.1	<1.1	<1	<1.1
Benzo(k)fluoranthene	---	---	0.34	0.038	<0.1	<1.1	<1.1	<0.1	<1.1
Chrysene	---	---	3.4	0.038	<1	<0.11	<1.1	<0.1	<0.11
Dibenz(a,h)anthracene	---	---	0.0034	0.038	<0.1	<0.11	<1.1	<0.1	<0.11
Fluoranthene	---	---	800	130	0.54 J	0.5 J	<1.1	<1	<1.1
Fluorene	---	---	290	1100	<1	<1.1	<1.1	<1	<1.1
Indeno(1,2,3-cd)pyrene	---	---	0.034	0.038	<1	<1.1	<0.11	<1	<0.11
Naphthalene	3.2	14	0.17	0.17	<0.1	<0.11	<0.11	<0.1	<0.11
Phenanthrene	---	---	---	18	<1	<1.1	<1.1	<1	<1.1
Pyrene	---	---	120	830	<1	<1.1	<1.1	<1	<1.1
Volatile Petroleum Hydrocarbons Analytical Results (ug/L)									
C5-C8 Aliphatics	---	---	1300	---	23.2 J	23.4 J	16.6 J	<50	<50
C5-C8 Aliphatics (Unadj.)	---	---	1300	---	32.8 J	32.9 J	18.8 J	<50	<50
C9-C10 Aromatics (Unadj.)	---	---	5.5	---	<50	<50	64.5	<50	<50
C9-C12 Aliphatics	---	---	100	---	13.9 J	9.9 J	38.5 J	<50 J	<50 J
C9-C12 Aliphatics (Unadj.)	---	---	100	---	<50	<50	104 J	<50	<50
Extractable Petroleum Hydrocarbons Analytical Results (ug/L)									
C11-C22 Aromatics	---	---	5.5	---	<100	<100	<110	<110	<110
C11-C22 Aromatics (Unadj.)	---	---	5.5	---	<100	<100	<110	<110	<110
C19-C36 Aliphatics (Unadj.)	---	---	60000	---	<100	<100	<110	<110	<110
C9-C18 Aliphatics	---	---	100	---	<100	<100	<110	<110	<110
Semivolatile Organic Compounds Analytical Results (ug/L)									
1,1'-Biphenyl	23	95	0.83	---	<1	<1.1	<1.1	<1	<1.1
1,2,4,5-Tetrachlorobenzene	---	---	1.7	---	<2	<2.2	<2.1	<2	<2.2
2,3,4,6-Tetrachlorophenol	---	---	240	---	<5	<5.5	<5.3	<5.1	<5.5
2,4,5-Trichlorophenol	---	---	1200	---	<5	<5.5	<5.3	<5.1	<5.5
2,4,6-Trichlorophenol	---	---	4.1	14	<5	<5.5	<5.3	<5.1	<5.5
2,4-Dichlorophenol	---	---	46	77	<2	<2.2	<2.1	<2	<2.2
2,4-Dimethylphenol	---	---	360	380	<5	<5.5	<5.3	<5.1	<5.5
2,4-Dinitrophenol	---	---	39	69	<10	<11	<11	<10	<11
2,4-Dinitrotoluene	---	---	0.24	1.1	<1	<1.1	<1.1	<1	<1.1
2,6-Dinitrotoluene	---	---	0.049	---	<1	<1.1	<1.1	<1	<1.1
2-Chloronaphthalene	---	---	750	1000	<2	<2.2	<2.1	<2	<2.2

Table 8
Former Brule Incinerator Area Groundwater Analytical Results - December 2016

Parameter	USEPA Residential Groundwater Concentration for Vapor Intrusion	USEPA Industrial Groundwater Concentration for Vapor Intrusion	USEPA MCL or May 2016 Tap Water RSL	April 2016 PRWQS ¹	BR-1 12/21/2016	BR-1 DUP 12/21/2016	BR-2 12/21/2016	BR-3 12/21/2016	BR-4 12/21/2016
2-Chlorophenol	---	---	91	81	<5	<5.5	<5.3	<5.1	<5.5
2-Methylphenol	---	---	930	---	<2	<2.2	<2.1	<2	<2.2
2-Nitroaniline	---	---	190	---	<5	<5.5	<5.3	<5.1	<5.5
2-Nitrophenol	---	---	---	---	<5	<5.5	<5.3	<5.1	<5.5
3&4-Methylphenol ³	---	---	930	---	<2	<2.2	<2.1	<2	<2.2
3,3'-Dichlorobenzidine	---	---	0.13	0.21	<2	<2.2	<2.1	<2	<2.2
3-Nitroaniline	---	---	---	---	<5	<5.5	<5.3	<5.1	<5.5
4,6-Dinitro-2-Methylphenol	---	---	1.5	13	<5	<5.5	<5.3	<5.1	<5.5
4-Bromophenyl Phenyl Ether	---	---	---	---	<2	<2.2	<2.1	<2	<2.2
4-Chloro-3-Methylphenol	---	---	1400	---	<5	<5.5	<5.3	<5.1	<5.5
4-Chloroaniline	---	---	0.37	---	<5	1.5 J	<5.3	<5.1	<5.5
4-Chlorophenyl Phenyl Ether	---	---	---	---	<2	<2.2	<2.1	<2	<2.2
4-Nitroaniline	---	---	3.8	---	<5	<5.5	<5.3	<5.1	<5.5
4-Nitrophenol	---	---	---	---	<10	<11	<11	<10	<11
Acetophenone	---	---	1900	---	<2	<2.2	<2.1	<2	<2.2
Atrazine	---	---	3	---	<2	<2.2	<2.1	<2	<2.2
Benzaldehyde	---	---	19	---	<5	<5.5	<5.3	<5.1	<5.5
Bis(2-chloroethoxy)methane	---	---	59	---	<2	<2.2	<2.1	<2	<2.2
Bis(2-chloroethyl)ether	8.4	37	0.014	0.3	<2	<2.2	<2.1	<2	<2.2
bis(2-Chloroisopropyl)ether	---	---	710	1400	<2	<2.2	<2.1	<2	<2.2
Bis(2-ethylhexyl)phthalate	---	---	6	12	<2	3.8	<2.1	<2	<2.2
Butyl Benzyl Phthalate	---	---	16	1500	<2 J	<2.2	<2.1	<2	<2.2
Caprolactam	---	---	9900	---	<2	<2.2	<2.1	<2	<2.2
Carbazole	---	---	---	---	<1	<1.1	<1.1	<1	<1.1
Dibenzofuran	---	---	7.9	---	<5	<5.5	<5.3	<5.1	<5.5
Diethyl Phthalate	---	---	15000	17000	<2	<2.2	<2.1	<2	<2.2
Dimethyl Phthalate	---	---	---	270000	<2	<2.2	<2.1	<2	<2.2
Di-n-butyl Phthalate	---	---	900	2000	<2	<2.2	<2.1	<2	<2.2
Di-n-octyl Phthalate	---	---	200	---	<2	<2.2	<2.1	<2	<2.2
Hexachlorobenzene	0.058	0.25	1	0.0028	<1	<1.1	<1.1	<1	<1.1
Hexachlorobutadiene	0.21	0.93	0.14	4.4	<1	<1.1 J	<1.1 J	<1 J	<1.1 J
Hexachlorocyclopentadiene	0.042	0.18	50	40	<10	<11	<11	<10	<11
Hexachloroethane	1.1	4.8	0.33	14	<2	<2.2	<2.1	<2	<2.2
Isophorone	---	---	78	350	<2	<2.2	<2.1	<2	<2.2
Nitrobenzene	50	220	0.14	17	<2	<2.2	<2.1	<2	<2.2
N-Nitrosodi-n-propylamine	---	---	0.011	0.05	<2	<2.2	<2.1	<2	<2.2

Table 8
Former Brule Incinerator Area Groundwater Analytical Results - December 2016

Parameter	USEPA Residential Groundwater Concentration for Vapor Intrusion	USEPA Industrial Groundwater Concentration for Vapor Intrusion	USEPA MCL or May 2016 Tap Water RSL	April 2016 PRWQS ¹	BR-1 12/21/2016	BR-1 DUP 12/21/2016	BR-2 12/21/2016	BR-3 12/21/2016	BR-4 12/21/2016
N-Nitrosodiphenylamine	---	---	12	---	<5	<5.5	<5.3	<5.1	<5.5
Pentachlorophenol	---	---	1	1	<4 J	<4.4	<4.3	<4	<4.4
Phenol	---	---	5800	10000	<2	<2.2	<2.1	<2	<2.2
Monitored Natural Attenuation Parameters Analytical Results (ug/L)									
Iron	---	---	14000	---	NA	NA	3320	NA	NA
Manganese	---	---	430	---	NA	NA	166	NA	NA
Alkalinity, Total	---	---	---	---	NA	NA	289000	NA	NA
Iron, Ferric	---	---	---	---	NA	NA	3300 J	NA	NA
Iron, Ferrous	---	---	---	---	NA	NA	<200 J	NA	NA
Methane	---	---	---	---	NA	NA	4	NA	NA
Nitrogen, Nitrate	---	---	10000	---	NA	NA	<110 J	NA	NA
Nitrogen, Nitrate + Nitrite	---	---	---	---	NA	NA	<100	NA	NA
Nitrogen, Nitrite	---	---	1000	---	NA	NA	<10 J	NA	NA
Sulfate	---	---	---	---	NA	NA	38600	NA	NA
Sulfide	---	---	---	---	NA	NA	<2000	NA	NA

Notes:

¹ April 2016 Puerto Rico Water Quality Standards Regulation for Class SG groundwater

² USEPA screening level and PRWQS are for 1,3-Dichloropropene. The USEPA and PREQB have not specifically established screening levels for cis-1,3-Dichloropropene or trans-1,3-Dichloropropene.

³ The Tapwater screening level applied to 3&4-Methylphenol is the screening level for 3-Methylphenol. This is a conservative level; it is lower than the screening level for 4-Methylphenol.

--- USEPA and/or PREQB have not developed a screening level for this compound.

Detected values are shown in bold.

Values which exceed a Drinking Water Quality Standard (USEPA MCL, USEPA Tapwater RSL, PRWQS) and/or a USEPA Groundwater Concentration for Vapor Intrusion are shown highlighted yellow.

Sample results with elevated reporting limits, due to sample dilution from the presence of other target compounds, that are above USEPA and PREQB groundwater action levels are shaded gray.

J - Indicates an estimated value.

NA - Sample was not analyzed for this parameter.